

McDonald's, MTV and Monsanto: Resisting Biotechnology in the Age of Informational Capital

CHAIA HELLER

BIOTECHNOLOGY AS A MODE OF PRODUCTION

A thing is a history of a thing, and more. Indeed, history is a tangled web with frayed edges, each woven into what came before. And so it is with biotechnology. To understand it, we must understand its history, the wider universe of people, places and things that brought it into being. Biotechnology is bigger than the instruments, organisms and scientists who move strands of DNA from one cell to another. It is a mode of production, a way of thinking about and producing nature and society that both constitutes and is constituted by society itself.

The story of genetic biotechnology begins not with a great man or a laboratory, but with the wider machinations of capitalism at the end of the twentieth century. But rather than begin with the usual catalogue of ecological ravages left in the wake of industrial capital, this story begins after the fact: after the pollution and the decimation of species, after the big question mark of global warming. This story begins in the morning, when capital awakens, staggering to the window with a hangover, after the party has ended, to look out over a world it has created in its own image. Out in the distance, it can see the rusted momentos of a better time: once-glistening Cadillacs lying on their sides, their hubcaps stolen and sold by someone struggling to make it to the end of one more day in post-industrial USA.

Biotechnology is more than a scientific practice. It is a network of actors, organisms, tools and discourses that circulate through the corporate, state and international trade apparatuses that emerged after the dust settled over post-World War II capital. While some claim that it is "nothing really new," that its transgenic creations represent a continuity with such previous biotechnologies as plant and animal breeding, they deny the underlying issue: transgenic biotechnology emerges out of a different world than plant breeding or beer

making. It emerges out of a different set of economic, political and social demands and commitments. Biotechnology is a new form of production that emerged as capital hit the limits of industrial production and began to enter what may be called its *organic* phase: a phase in which capital targets the reproductive dimensions of cultural and biological life as loci for intensified production and commodification.¹

In this phase, a service economy marshals what I will call the organic reproductive processes of everyday life including food, health and recreation, transforming them into franchised formations ranging from fast food and HMOs to MTV and Disneyland. Biotechnology emerges as part of this trend, reducing cultural and biological life processes into an ever renewable and flexible raw material for production. As Fredric Jameson points out, post-industrial capitalism is characterized by a global reach as well as by the penetration of capital into nature on a transformational scale never before thought possible.²

Recombinant DNA emerged as a possibility during a time when private industry was turning to new technologies to increase its returns on investments.³ Changes in US patent law in the early 1980s that recognized genetically modified organisms as "inventions" provided private industry and public universities with a commercial incentive to develop and eventually market their transgenic products.⁴ With rights to intellectual property assured, the biotechnology industry began to emerge as a particularly pliable and lucrative postmodern industry in the 1980s.

But public response to this new form of production has not been what corporations had anticipated. In the United States, after the initial public concern of the 1970s over genetic engineering had died down, corporations did not expect to encounter further difficulties in marketing transgenic medicines and foods to consumers in an increasingly global market. The Reagan and Bush administrations believed that they could guarantee the success of the biotechnology industry by giving a green light to US corporations to research, develop and market their products without being hindered by regulations.

By the late 1980s, however, the first signs of resistance began to appear on the horizon. In 1987, a group of Earth First! and eco-anarchist activists in the San Francisco Bay Area of California destroyed an entire field of experimental genetically modified strawberries, causing thousands of dollars in damages.⁵ In 1992–93, the resistance went international when thousands of peasants in India protested against Cargill, whose costly patented seeds threatened their agricultural viability and autonomy.⁶ In the fall of 1996, when the first shipments of genetically engineered crops arrived by boat in Europe, Greenpeace International organized a campaign in which activists besieged ships containing transgenic crops as they arrived in European ports. Demonstrating at warehouses and processing plants in Germany and Switzerland, activists created a media spectacle that catalysed a Europe-wide movement that is still gaining strength today. More recently, at the great demonstrations against the World Trade Organization in Seattle in November 1999, activists from around

the world protested against agricultural biotechnology as part of a wider critique of globalization.

As the Seattle demonstrations illustrated, resistance to technologies such as agricultural biotechnology is often broader in scope than resistance to the production of genetically modified organisms. It is also a refusal of a new way of ordering social and biological life. If technology is the network of actors, institutions, instruments, organisms and discourses that constitute technological practice, if this network both constitutes and is constituted by a wider society, then it is clear that activists are not simply resisting biotechnology. They are, in fact, resisting a world.

Let us look closely at this world. Let us see biotechnology not solely as a science or technological practice, but as part of a wider historical process: as a new way of producing nature and culture marked by degrees of *flexibility, organicity and recombinance*. To examine this new mode of production, we must step back, before the emergence of biotechnology, to discuss a profound sea-change that has been occurring within capitalist production, a sea change that began thirty years ago.

FLEXIBILITY, ORGANICITY AND RECOMBINATION: FEATURES OF A NEW INFORMATIONAL MODE OF PRODUCTION

First, to examine the modality of flexibility, we must explore a dramatic shift that has been taking place in the structure of the capitalist system. The Fordist system of production (a system of assembly-line mass production that introduced the Model-T Ford), which held prominence up through the heyday of US economic growth between 1945 and the Vietnam War, has been undergoing a period of thorough restructuring. Political and economic practices of sedentary and rigid industrial manufacture have been gradually displaced by a more "flexible" approach to capitalist production and accumulation.⁷

The decline of US corporate productivity and profitability after 1966 coincided with the recovery of Western European and Japanese economies. For US industry, this meant increased competition at a time of declining profits and increased inflation, weakening the US dollar as a stable international reserve currency. For the first time in decades, the US witnessed the demise of its power to regulate the international financial system. To address this crisis, capitalists began to soften up the industrial system to meet the demands of an increasingly competitive global market. The Fordist system, which had reigned since the turn of the twentieth century, had become increasingly anachronistic due to inflexible systems of manufacture, including fixed capital investments, mass production systems, and inflexible industrial design. Fixed labour markets, labour allocation, and labour contracts with a unionized workforce rendered the system too rigid to be able to compete with foreign labour structures.⁸

To compete with emerging industrial powers around the globe, US corporations literally became "foreign corporations" by going transnational,

appropriating the labour, resources and markets of countries throughout Asia, South America and Africa. The desire of First World capital for flexibility coincided with the need of newly independent Third World nations to achieve economic stability and autonomy. As these governments attempted to rebuild the infrastructure of a post-colonial economy, they allowed First World industries to set up shop within their borders. This transfer of US industry to the Third World attests to the fact that there is nothing so "post" about "post-industrialism": First World countries are still "industrial"; they just moved their industrial infrastructure to the Third World.

SERVICE INDUSTRY AND THE ORGANIC PHASE OF CAPITALISM

Emptying out the industrial core within the US left behind an enormous productive void that would be filled by new forms of service production. With the emergence of a capital-intensive service industry, corporations increasingly began to commodify dimensions of everyday life, reducing reproductive dimensions of social life to mass-produced informational product. Indeed, today, capitalism is penetrating organic domains of "life, culture and imagination": qualitative dimensions of social life that include the biological reproduction of the species and the cultural reproduction of everyday life, in all of its symbolic meaning.

In the pre-war industrial era, there still existed a more distinguishable line between the commercial marketplace and the realms of home and neighbourhood. Stepping out of the factory, the worker could still return each night to a neighbourhood community and private life that were marked by degrees of organicity, solidarity and self-management.⁹ If a service economy existed alongside industrial capitalism, it existed as a secondary source of job provision and capital accumulation. Over time, the tension between forms of commodified and non-commodified cultural practice began to wane, as reproductive cultural practice was increasingly coopted by service industry. The commodities manufactured by an informational capitalist system increasingly took the form of services: restaurants, childcare, medical care, poverty service (including a panoply of social welfare agencies and prisons) and financial services.

Present-day service capital represents the dispersed concentration of capital into standardized franchised units. Whereas Fordist production created one central site of factory production, informational capitalism disperses small, service-oriented "factoryettes" in the form of franchised chain stores, chain restaurants, and chain service stations. Replacing the idiosyncratic flavour of local service provision that was the hallmark of the industrial era, we see the emergence of "enchainment": the strangling of a local economy by a ring of chain stores and businesses. Whether clustered together in shopping malls or along downtown strips, the appearance of franchised chain stores, from fast-food and film processing to auto-repair stations and daycare centres, represents the move of capital into its more serviceable mood.

Such cultural enchainment is hinged on the idea of intellectual property. As a semiotic factory, a chain store owes its economic and cultural potency to its ability to reproduce a set of patented symbols, images, texts, building design and production protocols dispersed in the form of franchised service factoryettes. For reproductive cultural practice to become capital intensive, both the service product and the process must be transformed into intellectual property. The corporation of the informational age, then, must sell more than mere service product. McDonald's success lies in its ability to transform hamburgers into a patented semiotic field of informational signs, symbols, images and texts. In the post-war period, we see mega-corporations mass-produce service commodities whose value is linked not necessarily to their general *content*, but to their *form* or informational value. In the end, it's the golden arch, not the beef, that makes McDonald's a world power.

While service production itself is not a historical novelty, it undergoes a dramatic transformation when it reaches the post-industrial period. What is new is the intensifying concentration of capital into the service industry, the national and global expansion of service production through standardized, franchised chain-store formations, and the transformation of service commodities into patentable information.

By translating both its processes and its products into "informational" or intellectual property, the service industry is a form of informational capital relying on informational technologies. Here, it is critical to broaden the definition of informational technologies beyond its current association with technologies in microelectronics, computing, telecommunications, optoelectronics and genetic engineering. In this definition, we may include a domain of information-based service production that is not classifiable as primarily telecommunications or biotechnology: a domain of franchised cultural production ranging from McDonald's and Wal-Mart to Disneyland.

As an informational technology, the franchised service industry not only commodifies domestic products within the home, but moves domestic processes outside of the home as well, relocating what were local cultural practices into often translocal franchised service centres such as fast-food restaurants, daycare and elder-care centres, shopping malls and franchised playgrounds.

As the service industry has proven, the production of practice is often more lucrative than the production of product. By enclosing upon the domain of service, informational capital triumphs over the limits of sedentary Fordist production. For example, once a consumer has purchased a sedentary product such as a colour television, the transaction becomes rigid and complete.¹⁰ The television manufacturer must wait five to ten years before the consumer will be obliged to remake the purchase. In contrast, when a consumer rents an ephemeral video, the transaction is not complete, but is fluid and open-ended. The video-rental agency need only await the following evening for the consumer to return the video, ready to rent another.

In turn, informational capital, as a form of flexible production, appropriates the attentiveness and situational orientation of the domestic sphere, an

orientation that was dismissed by both classical liberal theory and the rationalizing logic of industrial capitalism. By rearranging information to create specialized products, an information-based service economy mimics both the sensibility and the mechanisms of domestic cultural reproduction.¹¹ Just as an attentive parent must cope with the particularized needs of their loved ones, corporations like Burger King are ready to meet consumer needs as well, presenting the world with the first flexible burger. The 1970s' Burger King jingle is truly the anthem of the service era it ushered in: "Hold the pickles, hold the lettuce/ special orders don't upset us/ all we ask is that you let us/ have it your way..."

THE RISE OF RECOMBINANT USA

If rationalization and homogenization are the hallmarks of industrial capitalism, then recombinance is the emblem of informational capitalism. Recombinace is a productive modality characterized by the continual remelding of architecture, graphic design, radio, television, and film that have come to constitute the spectacular stage.¹² Within recombinant production, the assembly line is reversed to create the "anti-assembly line." Whereas the Fordist assembly line moved in a linear direction from "standardized parts" to create "unified wholes," the post-Fordist anti-assembly line rearranges unified wholes to create a pastiche of informational parts. For example, as the Fordist assembly line transformed standardized car parts into whole cars, the post-Fordist anti-assembly line rearranges unified wholes, such as songs, to create a pastiche of song parts (creating endless remixes of songs, as in much of sampled hip-hop).

Recombinance provides the flexibility required by a standardized service industry, furnishing the informational "movable joints" for the production of otherwise rigid and homogeneous service commodities. The patented recipe for one standarized service product such as a Burger King "Whopper" becomes an endless series of variations on the Whopper theme. The modality of recombinance articulates itself today through postmodern architecture, art, design, music, fashion, and even social theories, which extract signs and symbols from various cultural moments to create wholes comprising components that often share no common history or development. Within recombinant production, cultural artefacts are reduced to information bits to be cut and spliced together to create novel commodities.

Recombinance characterizes a range of telecommunicative practices ranging from virtual reality to the hypertexts of the CD-ROM, practices in which "users" of interactive media engage in recombinant practice, selecting, manipulating and synthesizing bits of text or image to create textual novelties. In the music industry, we see a shift from artist-driven music production to a music produced primarily by sound engineers who sample and mix pre-produced music tracks, which represent the hallmark of recombinant culture. And recombinance is prolific: one song can provide the seed for a limitless crop of arrangements to be sold to dance clubs, dentists, retailers, and shopping

malls. More and more, we do not create integrally, conveying the gradual and coherent unfolding of one idea or image to another. Those who grew up on a diet of MTV and video games are often more comfortable selecting items from pre-prescribed digital menus or just moving things around.

Yet we cannot base a critique of recombinant culture on a static notion of cultural integrity or purity. It is vital to distinguish commodified recombinance from the forms of spontaneous collective synthesis that are integral to all cultural practice. As the field of anthropology has acknowledged in recent years, culture-making has always been a hybrid process, a continually developing synthesis of information, language and identity that emerges within and between peoples of different populations and cultures. Rather, it is the *privacy* of profit-driven recombinance, as a principal form of capital-intensive production, over non-commodified forms of local, fluid and hybrid cultural production that is problematic. Of great concern is the declining tension between holistic and local forms of cultural generativity and moments of translocal commodified recombinant production and consumption. The shift of capital towards an elastic and limitless production of recombinant informational service products flags a sharp curve in the capitalist road.

BIOTECHNOLOGY AS INFORMATIONAL CAPITAL

So far we have explored the wider context of the post-industrial era that gave birth to an informational capitalism that reaches into the "organic" reproductive dimensions of everyday life, culture and imagination, creating new flexible and recombinant forms of production. Now we may ask: what do McDonald's and MTV have in common with biotechnology? To answer this question, we must first recognize McDonald's, for instance, as constituting more than just a centre for retail and other services. We must understand it as a new recombinant and flexible mode of production, as an informational technology for producing new understandings and practices of culture through the production of service. Once we understand what McDonald's is and what McDonald's does, the connection between recombinant DNA and "recombinant USA" becomes very clear.

Like other informational technologies, biotechnology is particularly flexible, allowing capital to meet the ever-changing demands of an increasingly competitive global market. With a virtually endless supply of "biological information" in the form of genes, bacteria, viruses and other organisms for recombinant production, biotechnology allows capital to transcend its reliance on an exhaustible and expensive resource base dependent upon fossil fuels and primary materials. In turn, its scale and dexterity permits industry to transcend the inflexible factory design of the Fordist era. Exchanging the factory shop floor, with its heavy machinery and army of (organized) labourers, for the sterile laboratory, with its delicate instruments and handful of expert (often unorganized but well paid) research directors, postdoctoral fellows and technicians, the biotechnology lab is truly a postmodern factory.

The movement of major corporations into the domain of such reproductive cultural practices as seed development represents a move towards an increasingly informational mode of capitalist production. Corporations such as Monsanto, an agrochemical multinational invested heavily in agricultural biotechnology, manufacture tailor-made, specialized agricultural products to suit particular niche markets. Shifting from industrial chemicals to information-based service production that targets "organic" or biological reproductive cultural practices such as agriculture, Monsanto recast itself as a "life sciences" company, investing enormous capital on the development of agricultural biotechnology. Monsanto insists that it is the Microsoft of the biotechnology world,¹³ providing its patented "software" of genetically programmed seeds that are only compatible with its patented "hardware," or chemical inputs. Monsanto's Roundup Ready soybeans are genetically engineered to be compatible with its popular herbicide glyphosate (marketed as Roundup), compelling consumers to buy both products at the same time. Such product coupling allows corporations to create products so specialized that they require consumers to buy accessory "kits" only they can provide.

In this way, agricultural biotechnology is a form of information-based service production not unlike domestic, leisure and tourist services. Corporations such as Monsanto use the same franchise logic as McDonald's to extend their information-based service empire, transforming farmers into franchise middle-managers who will buy their cloned and patented informational product. Like McDonald's middle managers, farmers "lease," rather than own, the materials obtained from the "parent" corporation. Farmers who buy Monsanto seeds are obliged to sign one-time use agreements promising not to replant seeds for the next year's season.

Under the reign of agricultural biotechnology, farmers become increasingly deskilled and dependent upon the activities of service providers, such as agrochemical companies who begin to provide seeds and products that farmers formerly provided for themselves. And just as corporations such as fast-food franchises provide food service that capitalizes on workers' needs for quick, accessible and transportable food by workers in a flexible economy, Monsanto promises to produce specialized seeds and chemicals that capitalize on farmers' needs to adapt flexibly to an ever-changing agricultural economy.

However, capital must confront one problem in its attempt to appropriate biological reproductive processes: unlike service commodities such as hamburgers, a seed has the potential to reproduce itself biologically. At stake is the attempt to exploit the limitless dimension of biological reproductive power, even while stripping biological organisms of their autonomous generativity.¹⁴ Indeed, informational capital must be able to co-opt the farmers' cyclical biological need for seeds while also destroying seeds' generative properties.

Technologies such as the "Technology Protection System" (renamed the "Terminator Technology" by anti-GMO activists) signal the concentrated efforts of corporations to enhance and produce new forms of organic obsolescence. Having sought the patent for a technology that produces genetically

engineered seeds whose offspring will be sterile, Monsanto hopes to be able one day biologically to obstruct farmers from saving seeds for the next year's planting season. Although the corporation publicly announced plans to abandon the technology due to "sensitivity" to public opinion, Monsanto will likely re-embark on the project once public reaction has died down.¹² Once agri-biotechnology multinationals have developed a commercially viable seed sterilization technology, they will eliminate the exorbitant financial costs (as well as costs related to bad PR) of hiring private police and lawyers to identify and sue farmers accused of breaking "one-time use" seed agreements.

BACKED-UP NATURE: BIOPROSPECTING AND THE ADVANCED CAPITALIZATION OF NATURE

Biotechnology is the systematic conversion of biological nature into informational capital. As an expression of what may be called "the advanced capitalization of nature," biotechnology represents the attempt of informational capital to profit from and transcend the limits of a biological nature that has been greatly compromised by industrial capitalist production. In the twenty-first century, capitalists deploy informational technologies to "back up" nature by identifying, patenting, and profiting from whatever is left of the earth's diverse life forms to use for future industry. While the Human Genome Project (HGP) (the internationally funded programme to map the ten thousand genes in the human genome) attempts to map out future colonial territories within the cells of human beings, attempts are being made to map out future colonial territories within the biological nature of plants, animals and other organisms. Such prospectors include botanical gardens in the US and the UK, the National Cancer Institute, independent biologists serving national and international institutes, and private companies.

While bioprospectors race to save the best of the last of "nature," a host of "anthro-prospectors" race to save the best of the last of human cultures that are at risk of being driven off native lands and driven into assimilation within centres of urban poverty. However, rather than fight against such injustice, anthro-prospectors are collecting genetic samples from individuals living within cultures identified as being "at risk." Beginning in 1991, the Human Genome Diversity Project (HGDP) emerged as an anthropological correlate to the HGP. However, whereas the HGP focuses on mapping one complete genome, the HGDP focuses on exploring the subtle genetic variation between human populations (see Chapter 18 in this volume).

The question of biodiversity, both human and non-human, is steeped in conservationist rhetoric. Corporations and governments posit the effects of capitalist plunder as a legitimizing cause of the need for further corporate control of what is left of the earth's biological life.¹³ Genes of plants, animals and humans considered potentially valuable are stored in "national biodiversity inventories" while awaiting potential commercial applications. It is here, within the endless rows of frozen test tubes, filled with the "best of the last" specimens

of biological life, that the relationship between science and informational capital comes to light.

POLITICIZING BIOTECHNOLOGY: "THIS IS WHAT DEMOCRACY LOOKS LIKE"

Once we understand biotechnology as a new way of producing and ordering society and nature, we may begin to comprehend better the relationship between Monsanto, McDonald's and MTV. We can see these structures as producers of a recombinant, flexible, yet tightly controlled and standardized world of informational capital.

What are the features of the "biotechnological world" we seek to resist? As we have explored, it is marked by the increasing harnessing of reproductive processes of everyday life and by a transition to a new flexible, organic, and recombinant form of service production heavily reliant on informational technologies. But even more broadly, this world is one in which citizens are disempowered, obliged to accept or merely protest the whimsical decisions of leaders who make public policy in representative democracies such as the US. This shift from industrial to informational capital, this transition to what could rightly be called a "mall world" of recombinant and standardized service, is not the result of citizen action. It is being chosen, regulated and controlled by a Mafia of capitalist and governmental leaders around the world who represent less than 1 per cent of the people on the planet. This is not democracy. It is a world that is being managed by an elite few, not only the leaders of nation states but increasingly, the managers of capital attempting to assume a new governmental form.

Thus, in addition to the economic, cultural and technological facets of the problem of informational capital, there is also a political dimension that is crucial to explore as well. Political life, both in its statist form and in its real original form (to be addressed later) is being reconstituted and further degraded by the rise of informational capitalism.

First, political structures such as the state are targets of informational capital. The emergence of such transnational institutions as the World Trade Organization (WTO), dominated by a US corporate lobby, ushers in an era in which the political sovereignty of the nation-state is being overridden by new capital-driven institutions that are neither corporations nor states: they are *meta-states*, expressions of informational capital as it emerges into an autonomous administrative and juridical governmental power that will greatly shape both state and corporate practice. As a truly postmodern entity, the WTO is pure service: it is a bureaucratic service for the extension of capital across national boundaries to ensure the most flexible systems of production, importation and marketing possible. One could also say that the WTO is *meta-capital*. It is capital-plus. Its endless documents of trade and intellectual property "agreements" represent the textual infrastructure for flexible capitalist accumulation.

While movements against biotechnology often engage a political critique,

contesting, for instance, the WTO's attempt to wrest juridical power from the state, such critiques often defend state sovereignty, asserting the need to reform or abolish the power of the WTO. In so doing, they fail to question the legitimacy of the state as a political institution, missing the vital opportunity to transcend the state's hierarchical and centralized logic and structure. In turn, movements against biotechnology often express an anti-corporate rather than an anti-capitalist stance. Citing corporations, instead of the capitalist system itself, as the main source of the problem, activists attempt to turn the "capitalist clock" back to a kinder and gentler form of capitalism. Unfortunately, this critique also fails to recognize the need to move beyond a logic based on hierarchy and centralization, and thus cannot move beyond a capitalist system that was born out of a logic of unlimited growth, accumulation, profit and domination.

High noon will always eventually turn to midnight. There is a logic to a clock: its gears, springs or silicon chips modulate its movements in particular ways. Like a clock, capitalism and the state are constituted to move in a particular direction: towards ever greater levels of centralization, hierarchy and, ultimately, non-democracy. Indeed, when we look historically at the modern nation-state, we see that it rose in tandem with capitalism, and out of the same logic of domination. Rather than simply attempt to turn the clock of domination back, we must develop a new sense of time and history, built not out of the dustbin of capital and state-driven events, but out of the potential within the human spirit and the revolutionary impulse itself. We can think beyond what is immediately before us, drawing from the logic of a different "clock" that has been beating in the heart of humanity since the beginning of time.

Politicizing biotechnology entails moving towards a logic based on human freedom. It requires reclaiming the original meaning of politics developed by the Greeks many centuries ago: the power to assemble as *citizens* to govern our own communities.¹⁷ According to social ecologist Murray Bookchin, the political life of free citizens cannot be reduced to "statecraft," or to the managerial and authoritarian practices of the state that are so often confused with real politics.¹⁸ For Bookchin, real political power is the power of citizens to make decisions *in general* about their lives. It is the power to gather as members of communities to discuss, decide and determine the public policies that will shape how we work, produce and live together. Until we have this power, we will be left only to stand on the sidelines of society, fighting for rights, choices, alternatives and improvements within a system we know to be on a collision course with most of humanity and with the rest of the natural world.

If our concerns about biotechnology are concerns about the *social production of society*, then we must begin to ask who indeed should produce society? Should McDonald's, MTV and Monsanto produce the food, art and very stuff of our lives? What would it take for people, in the towns in which they live, to be able to decide for themselves the kinds of lives they would like to lead? The question I am posing is not solely "economic." It is not enough to

fight against informational service capital, waging individual campaigns against Wal-Mart or Monsanto, trying to keep chain stores out of our communities or to ban genetically engineered food from our supermarkets. While such campaigns are necessary in the short term, they must be filled out with a broader political analysis and reconstructive vision. In turn, it is not enough to create asylums of cultural and economic autonomy such as local food coops or organic growers' associations. While they provide (often privileged) groups of individuals with shelters of sanity and health, they cannot counter a system that reaches deep into the lives of poor people across the world who are forced to participate in both service and industrial production to survive.¹⁹

The real antidote to capitalism is to refuse its tendency to translate the world into its own terms. Capital transforms us into workers, producers, commodities and consumers so effectively, so seamlessly, that we see ourselves primarily as economic agents, as resisters to, or producers of, economic practice. The dissolution of the idea of citizen into the idea of consumer, with the new notion of consumer/citizen, signals the final collapse of humanity into homo oeconomicus. But we are also, as Aristotle said, *zoon politikon*, a political animal. We are beings with the potential to think, discuss, decide and determine all aspects of our lives, including matters of economics. The fact is, we cannot fight economics with economics. We can only topple an economic system by pushing back with political power. The enormous dislocation of peoples, capital and goods throughout the world can be countered with a movement for a new kind of political loyalty based on principles of confederation, cooperation and direct democracy.

If we are to retrieve the notion of citizenship from the category of consumer and from the category of the state as well, we have to ask ourselves what kind of citizens, what kind of political life, do we want to retrieve? Can we only reconstitute ourselves as citizens bound by national borders, passively represented by politicians, citizens who are dominated by the nation-state? Or may we re-establish ourselves as new kinds of citizens empowered to participate directly in the management of our everyday lives? It is time that we begin to build a *direct democracy*: one in which citizens meet directly, face to face, to determine democratically their own lives.

In the 1999 anti-WTO demonstrations in Seattle, the call for direct democracy was in the air. Direct confrontation with state military forces in the form of police and the National Guard led to a five-day period of radicalization among young activists, for many of whom this was their first encounter with military repression. The real, yet more abstract, fight against the WTO concretized itself into a struggle against the non-democracy of the state and capital, as activists found themselves beaten, injured by chemical weapons, jailed, tortured and deprived of their civil rights in a "progressive" First World city – merely for engaging in peaceful protest and for taking to the streets as citizens to express their freedom of speech.

There were countless marches that week as courageous activists risked their safety to take to the streets, refusing the curfew and no-entry zones dictated

by the city of Seattle in conjunction with the federal government. During one march, a chant arose, poetically and spontaneously, that captured the imagination and passion of the other activists who were undergoing a life-changing transformation. After days of collective democratic decision-making and peaceful intelligent protest, after days of seizing the right to think, decide and take public action, they began to chant over and over, *This is What Democracy Looks Like*. On an intuitive and rational level, activists knew that democracy is a direct act; it is the movement of real people as they take action to participate in a face-to-face embodied way, in determining their own lives.

This chant, *This is What Democracy Looks Like*, entails a new way of thinking about political reconstruction. It means not only that we take to the streets, but that we take to our communities, demanding and rebuilding a real and passionate political life. This chant inspires us to develop a new understanding of citizenship that is not defined in relation to a state or nation, but is instead defined in opposition to nations and states. It is time to redefine citizenship in relation to local communities and to regional, continental and even global confederations.

People challenging globalization often use terms such as "local" and "global" when discussing how to transcend the current system. Yet the local/global dyad fails us as we attempt to map out the units of political organization that will constitute the new society. While the idea of "thinking globally and acting locally" rightly asserts the need to rebuild local communities within a humanist and internationalist context, the idea must be elaborated in distinctly political terms. While the term "local" could be translated into the city, town or village as a political body, the *global* does not translate into a clear and concrete political structure.

What, then, would be the political structure that would embody the concept of the "global"? The spirit of humanism and internationality that is contained in the idea of the "global" could be translated into the political structure of the *confederation*. Indeed, the confederation is the next valid level of political organization as we move beyond the local level. A more meaningful way to counter "globalization" is to counter what is "global" with what ought to be local and confederal.²⁰

This approach to the question of political reconstruction is called libertarian municipalism.²¹ Developed by theorist Murray Bookchin, libertarian municipalism is a way of thinking about political transformation that proposes a way to counter globalization by establishing self-governing local towns, cities and villages, linking them together to form confederations. Within libertarian municipalism, members of communities reclaim existing local political forums such as city and neighbourhood councils, gradually transforming them into citizens' assemblies. Using local electoral campaigns as one way of educating the public about direct democracy, libertarian municipalism proposes that citizens begin to seize publicly their potency as political actors, wresting decision-making power from states, corporations and meta-states such as the WTO. As members of municipalities form local groups engaged in the process

of political transformation, they may confederate with other free municipalities to create a true *république de face*, a coordinated and united counter-power to the state and to capital as well.

To resist biotechnology is to dismantle the technical, social and political networks that both constitute and are constituted by this technology. We, too, must wake up one fine morning at the beginning of a new century and take a good look at what we see. Fixing our vision beyond the transgenic fruits ripening on our window sills, we must look even further still past the army of service workers running back and forth from job to job before picking the kids up from daycare at the end of one more day in Recombinant USA. If we look very hard, we will begin to see it all: a society based on systems of domination and social hierarchy, a network of state and capitalist institutions, and a world of people who are resisting the system to maintain their courage, imagination and intelligence through it all.

A movement that challenges biotechnology is a movement that challenges a world. It provides a critique not only of a particular science practice, but of a society that constitutes and is constituted by that practice. But more than critique, it proposes a better world. In such a movement, people inspire and inform themselves and others, helping to make the world legible and re-makable. A truly humane movement against biotechnology gives people hope for the future, as well as the knowledge and confidence to build a future worth fighting for. It is a movement for real political power, not just over technology, but over everyday life in all of its fullness. This is what democracy looks like.

NOTES

1. The notion of an "organic" phase of capitalism must be distinguished from Marx's concept of the organic composition of capital. Marx counterposed the organic composition of capital (the labour variable) to the variable of capital intensity. In contrast, I am pointing to the shift from a primarily industrial capitalist modality to one in which capital targets biological and reproductive dimensions of cultural practice as primary loci for creating surplus value.
2. Fredric Jameson, *Postmodernism; or, The Cultural Logic of Late Capitalism*. Durham, NC: Duke University Press, 1991; quoted in *Making PCR: A Story of Biotechnology*. Chicago: University of Chicago Press, 1996, p. 21.
3. Susan Wright, "The Social Warp of Science: Writing the History of Genetic Engineering Policy," *Science, Technology, and Human Values*, vol. 18, no. 1, Winter 1993.
4. Andrew Kimball, *The Human Body Shop*. San Francisco: Harper, pp. 188-203.
5. Homi K. Bhabha (pseud.), "The Strawberry Liberation Front," *Earth First!*, vol. 7, no. 6, June 1987, p. 1; Brian Tokar, "Engineering the Future of Life?" *Z Magazine*, July/August 1989, p. 110-16.
6. See Chapter 26 in this volume, and Vandana Shiva, "Quit India! Indian Farmers Burn Cargill Plant and Send Message to Multinationals," *Third World Resurgence* 36, August 1993, pp. 40-41.
7. David Harvey's *The Condition of Postmodernity* (Oxford and Cambridge, MA: Blackwell, 1990) offers a comprehensive and wonderful discussion of capitalist "flexible accumulation." This work offers a creative and integrative look at the shift from Fordist to post-Fordist capitalism.
8. *Ibid.*, pp. 125-41.
9. Murray Bookchin, Lecture at the Institute for Social Ecology, Plainfield, VT, July

7, 1999.

10. Harvey, *The Condition of Postmodernity*, p. 156.
11. As feminist philosopher Joan Tronto points out, in the domestic sphere women demonstrate an ability to think and act in ways that are fluid. The care that women give to children and their families is particularistic and specialized, standing in sharp contrast to the universalistic stance that classical liberal philosophers such as Locke or Smith relegated to the public sphere. Whereas classical liberalism promotes the idea of "men" caring about universal and unchanging values such as "justice, liberty and freedom," women are largely relegated to the work of caring for the particularistic and ever-changing needs of people within their households. See Tronto's "Women and Caring: What Can Feminists Learn about Morality from Care?" in Alison Jaggar and Susan Bordo, eds., *Gender, Body, Knowledge: Feminist Reinterpretations on Being and Knowing*, New Brunswick, NJ: Rutgers University Press, 1989, pp. 172-88.
12. For a discussion of "recombinant culture," see Critical Art Ensemble, *The Electronic Dissonance*, New York: Autonomedia, 1994.
13. Revelling in high expectations for its own growth, the Monsanto agents came up with "Monsanto's Law," which states:

The exponential growth in the computing power of silicon chips, described by Moore's Law, led to the development of the information technology industry, creating aggregate global value in trillions of dollars. At Monsanto, we believe that a similar non-linear trend in biotechnology capabilities is creating comparable growth potential in the life sciences. We believe that these genomic technologies will continue to double in capability every 12 to 24 months — a statement we're calling "Monsanto's Law" (Monsanto Company Annual Report, 1998, inside front cover)

14. For an in-depth discussion of generativity in relationship to biotechnology, see Vandana Shiva, "The Seed and the Earth: Biotechnology and the Colonisation of Regeneration," in *Close to Home: Women Reconnect Ecology, Health and Development Worldwide*, Philadelphia: New Society Publishers, 1994.
15. In reality, Monsanto never really controlled the patent for "Terminator" seeds. They tried for nearly two years to purchase Delta and Pine Land, the company that developed the Terminator along with USDA scientists, and this purchase fell through in December of 1999. Delta's executives deny they ever slowed development of Terminator, and some thirty related patents are currently held by the largest transnational biotechnology companies. See RAFI Communiqué, "Suicide Seeds on the Fast Track: Terminator 2 Years Later," Rural Advancement Foundation International, February/March 2000, at <http://www.rafi.org>.
16. Arturo Escobar offers a compelling and critical analysis of biodiversity discourse. See "Cultural Politics and Biological Diversity: State, Capital and Social Movements in the Pacific Coast of Colombia," in Orin Starn and Richard Fox, eds., *Beyond Resistance and Revolution: Culture and Social Protest*, New Brunswick, NJ: Rutgers University Press, 1998, pp. 40-64.
17. Murray Bookchin, the principal theorist associated with social ecology, writes about the need to reconstitute citizenship in a post-state context by creating direct democracy. See *Urbanization Without Cities: The Rise and Decline of Citizenship*, Montreal: Black Rose Books, 1992.
18. *Ibid.*, pp. 123-75.
19. I discuss the limits of such projects in my book *Ecology of Everyday Life: Rethinking the Desire for Nature*, Montreal: Black Rose Books, 1999.
20. See, for example, "Libertarian Municipalism," in Janet Biehl, ed., *The Murray Bookchin Reader*, London: Cassell, 1997, pp. 172-3. Biehl also provides a discussion of Bookchin's notion of confederalism in *The Politics of Social Ecology: Libertarian Municipalism*, Montreal: Black Rose, 1998.
21. Bookchin, "Libertarian Municipalism."